

KAHO‘OLAWE: SAFE AND MEANINGFUL LAND USE THROUGH RISK MANAGEMENT

Mr. Keoni Fairbanks and Mr. Stanton Enomoto
State of Hawai‘i, Kaho‘olawe Island Reserve Commission
33 South King Street, Suite 501, Honolulu, HI 96813
Phone: 808-586-0761
Fax: 808-586-7589
Email: kfairbanks@kirc.state.hi.us / senomoto@kirc.state.hi.us

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ABSTRACT

On November 11, 2003, the U.S. Navy will transfer control of access to Kaho‘olawe Island to the State of Hawai‘i. The Kaho‘olawe Island Reserve Commission (KIRC) is the State of Hawai‘i agency responsible for managing use of the 45 square mile island.

The State of Hawai‘i recognizes that despite the clearance effort, residual UXO will remain on the island indefinitely and pose a long-term risk to the future users. While UXO disposition is a DOD responsibility, managing the future risk of encounter will also be a primary concern of the island’s manager, the KIRC. How will the KIRC provide for meaningful, yet safe, use of Kaho‘olawe in 2003 and beyond?

The KIRC is developing a Risk Management Plan for Kaho‘olawe. Public education, administrative access control, and other “institutional controls” are among the risk management options being considered. It is critical for the Risk Management Plan to be consistent with the intended land use and acceptable to future users while, at the same time, adequately addressing safety concerns. This paper explores, from the landowner and manager’s perspective, the realities and anticipated challenges of developing and implementing such a plan, including inter-governmental coordination between the State of Hawai‘i and Navy.

BACKGROUND

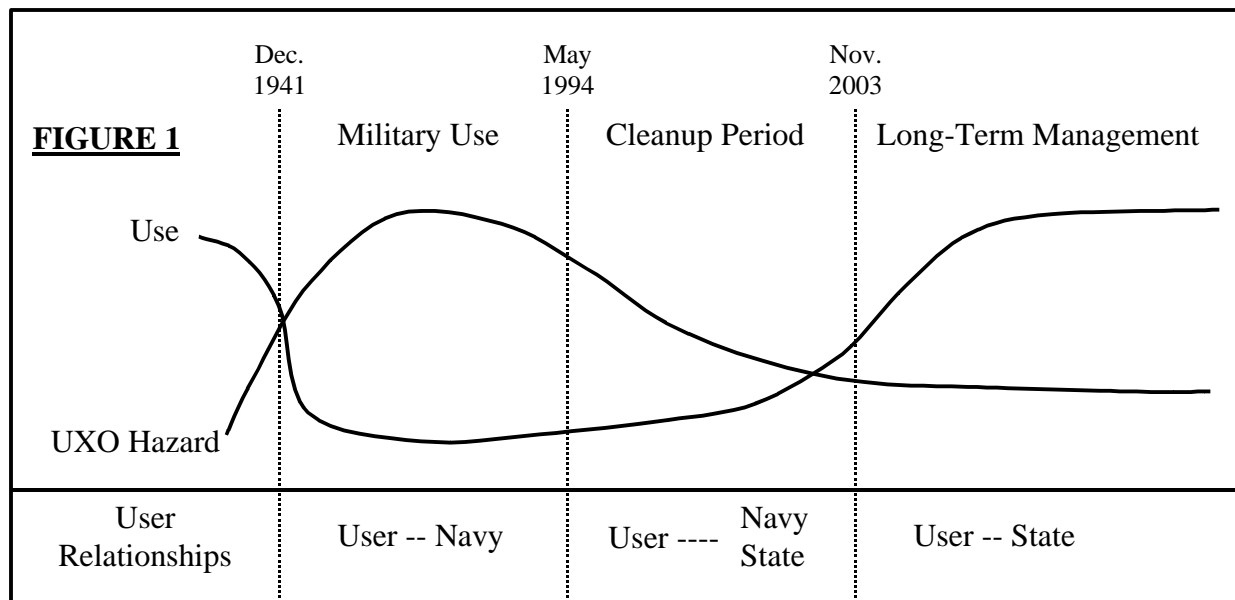
As one of the eight major Hawaiian Islands, Kaho‘olawe has a long history of use for native Hawaiian cultural practices that continued right through its 50 years of military control and bombardment. Kaho‘olawe contains over 500 archaeological sites dating back to 950 A.D. and is listed on the National Register of Historic Places. It was recognition of the island’s cultural use that lead to a federal court order in 1980 mandating “joint use” between Native Hawaiian cultural access and Naval purposes. It was the importance of “use” that further lead to the cessation of bombing in 1990, and the conveyance of the island back to the State of Hawai‘i in 1994 with the accompanying (on-going) \$280 million UXO cleanup.

The State of Hawai‘i, via the Kaho‘olawe Island Reserve Commission (KIRC), is the land owner and manager for Kaho‘olawe and the two-miles of ocean surrounding the island. On November 11, 2003, the U.S. Navy will transfer control of access back to the State of Hawai‘i. The KIRC will be solely responsible for allowing access and use of Kaho‘olawe. How can the KIRC provide the maximum amount of meaningful, yet safe, use of Kaho‘olawe?

UXO CLEARANCE IS A RISK MANAGEMENT TOOL TO SUPPORT USE

Meaningful use is imperative. Providing for meaningful safe use into the future is the challenge before the KIRC and its cleanup manager, the Navy. To address this challenge we must first acknowledge certain premises regarding risk, UXO hazard and use relationships, the nature of clearance actions, the environmental dynamics on Kaho‘olawe, and a practical approach to liability.

1. Understanding of Risk For the purposes of this paper, risk is defined as the relationship between UXO hazard and exposure/use. Without either component, risk cannot be identified. On Kaho‘olawe, UXO hazard and use (and therefore, risk) have existed for the past 50 years and will continue to exist in the period beyond 2003 (Figure 1).



Before the military use period, use of the island was much greater and UXO risks were very low. During the military use period, UXO hazards were relatively high, while human exposure/use was relatively low; subsequently the Navy was able to safely manage the risk. During the Cleanup period, the KIRC and Navy are providing limited access, and use of the island for cultural and environmental restoration purposes has slightly increased. Meanwhile, UXO hazards are actively being reduced through the efforts of the Navy’s contractor, Parsons-UXB Joint Venture. Both the Navy and KIRC are employing methods for successful risk management

during this period. After 2003, the KIRC will become the principal manager of the island and will seek to provide the maximum amount of meaningful use while managing the residual UXO hazard.

2. UXO Clearance in Context. UXO clearance is only a component of an overall risk management process to provide for meaningful use. It cannot, in and of itself, provide safe use; clearance only reduces UXO hazard.

The current Navy cleanup of Kaho‘olawe is a one-time event. The legislation for the cleanup provided a 10-year time constraint and limited funds. State/Navy agreements provide for the entire island to be surface cleared with subsurface clearance to specified depths in only about 30% of the area. UXO clearance technologies are limited in their effectiveness; both in terms of probability of detection and depth of detection. As a result, some level of UXO hazard will continue to be present after 2003.

Given the usually singular nature of cleanups, the most important product resulting from the Navy’s clearance project, aside from actual UXO removal, is data. Cleanup results indicating the type, location, and quantity of UXO will be extremely valuable for risk characterization in the future.

3. Environmental Dynamics. The island of Kaho‘olawe and its surrounding waters are geographically variable and environmentally dynamic. The geography of Kaho‘olawe includes: coastal bays, submerged reefs, valleys, dry forest woodlands, badlands, cliffs, and desiccated hardpan. Likewise, the effects of wind, rain, and the ocean are continually changing the landscape.

As the land managers of the island, the KIRC will need to thoroughly understand how the island is changing. Collection, analysis, and management of climate, soil, and vegetation data will allow for modeling and better understanding the physical characteristics of the island.

4. Liability can be “Managed.” Minimization of liability too often equates to restricted access and no use. Liability, safety, and risk are all different ways of expressing the same concept. However, use is the imperative. Therefore liability, safety, and risk must be addressed so as not to unduly restrict use. Providing meaningful use in an area which contains a level of UXO hazard requires an acceptance of liability or risk. They must, and can, be managed so that the KIRC is not unnecessarily eliminating meaningful use because of an abstract idea of safety or liability. The KIRC needs to develop management tools which can provide appropriate safe guards while allowing use.

A RISK MANAGEMENT APPROACH

Understanding the results and limitations of the cleanup, environmental change, and appropriate liability management tools is the foundation for the KIRC’s risk management program. By incorporating these premises into a comprehensive program, the State of Hawai‘i hopes to meet its imperative of providing meaningful use.

A Kaho‘olawe Risk Management Program would incorporate three key ingredients: data collection and management, risk characterization, and application of institutional controls. A conceptual depiction of how these ingredients are linked is provided in Figure 2 below:

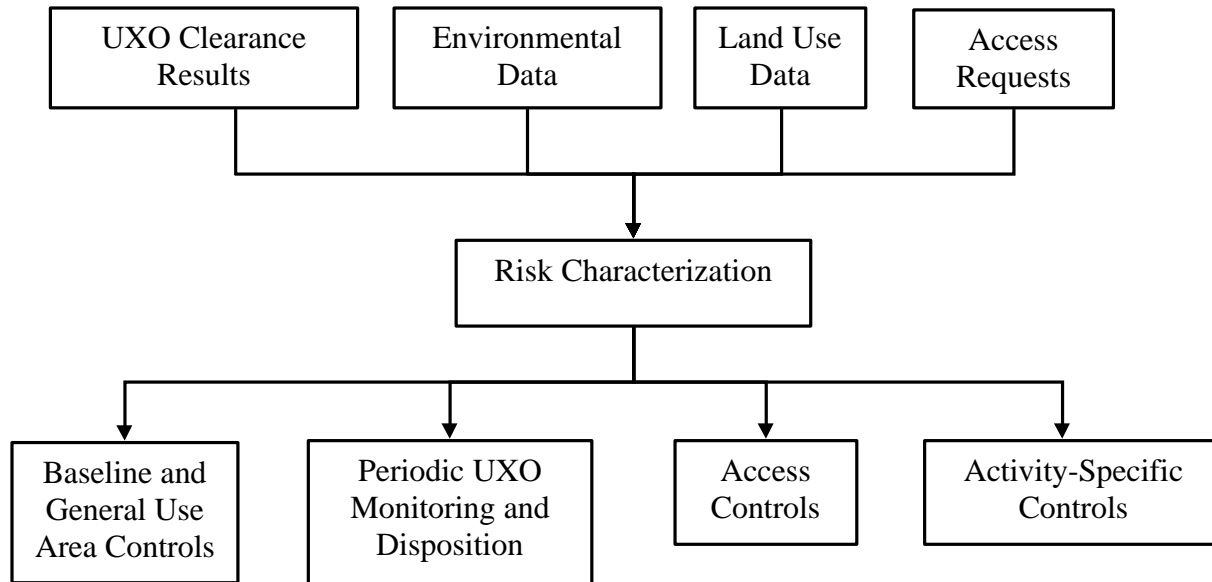


FIGURE 2

1. Data Collection and Management System: The Risk Management Program would need to acquire, integrate and manage a wide variety of data. It is envisioned that the following types of relevant information would be collected and managed:

- UXO data: The Navy will provide the KIRC with cleanup results, military/target histories, site characterization data, ordnance types, density, and distribution;
- Planned land use data: designated use areas, infrastructure improvements, roads, trails, restoration areas, and coastal use areas;
- Stakeholder/access group data: anticipated activities, possible intrusion/digging depths, group sizes, group ages, group type/organizations, duration of access, and modes of transportation to Kaho‘olawe.
- Environmental data: precipitation, topography, vegetation type and density, geology and soils, erodability, wind speed and direction, and temperature.

All of the information would be stored electronically, geographically referenced, and accessible from a GIS-type system. The system needs to have the flexibility to archive data as well as receive and store new information. The KIRC and the Navy are currently utilizing MS Access, Microstation, and an Intergraph-based viewing system for data management.

2. Risk Characterization: The Risk Management Program would need to develop a methodology/process for characterizing UXO risk on Kaho‘olawe. The risk characterization process needs to be dynamic, geographic based, and qualitative. It will interface with the data management system and evaluate varying levels of risk based upon UXO hazard and exposure in a particular area or region. In particular, the risk characterization process will need to consider the following:

- The dynamic nature of the UXO hazard. There will be varying levels of clearance throughout the island. Areas more susceptible to erosion and sediment transport have the ability to expose and move previously undetected ordnance. Areas previously cleared and certified have the potential to present new hazards.
- The dynamic nature of human use on Kaho‘olawe by various groups/organizations. Group sizes, composition, desired activities, duration on-island, and mode of transport will vary by location. Access requests will need to be handled on a case-by-case basis.
- Designated use areas on Kaho‘olawe. As currently planned, campsites, cultural centers, roads, trails, and planting areas have been designate in various locations around the island. However, these sites will all need to be maintained and may need to be relocated as a result of changing environmental conditions. Also, new infrastructure improvements may need to be constructed to better facilitate use.

3. Application of Institutional Controls: Based upon the results of the risk characterization process, appropriate institutional controls may need to be applied to a particular area or activity. Application of institutional controls will in some cases allow for greater use than would be reasonably safe without such controls. The following four basic types or groupings of institutional controls are being considered:

- Baseline and general use area controls such as: markers/signs delineating clearance boundaries, general warning signs, establishing engineering controls, and infrastructure design requirements.
- Periodic UXO monitoring and disposition procedures (implemented through an agreement with the Navy). Monitoring frequency will be a function of UXO hazard. Emergency response procedures will also need to be developed for responding to UXO identified by users.
- General access control procedures such as: liability waivers, access permitting, group size and age limitations, island orientation, educational materials, UXO reporting, public outreach, and island rules.
- Activity-specific procedures tailored to each specific access request which may include: additional site/area specific orientation, UXO escort, dig permits, UXO avoidance, and group size and/or age limitations.

Items which will need to be considered for the various institutional controls, include:

- An implementation schedule for various engineering controls considering on-going clearance activities, logistics, cost, and construction requirements.
- Long-term maintenance and operation of engineering controls, infrastructure, access orientation/permitting, and public education.
- Enforcement of permits conditions, and deterrence of trespassing, and other illegal activities.

SUMMARY AND CONCLUSION

Meeting the State of Hawai'i and the U.S. Navy's objective to provide meaningful use of Kaho'olawe, requires an examination of premises in regards to liability, risk, and the results of UXO clearance. A singular UXO clearance project cannot ensure long-term meaningful use because human use is dynamic, as is the environment of Kaho'olawe. Consequently, risk and liability must also be managed dynamically in order to meet the objective of meaningful use. UXO clearance is simply one risk reduction component of a larger risk management program in order to provide for the continuing meaningful, safe use of Kaho'olawe Island.